

IN THE CLAIMS

Claims 1-20 (Canceled)

21. (New) A monitoring apparatus for chemical substances comprising:

a sample introduction portion which introduces a sample gas into an ion source for ionizing the sample gas; and

an ion trap mass spectrometer for mass analyzing ions produced in said ion source,

wherein said ion trap mass spectrometer selects ions of plural species of molecules to be measured and dissociates the selected ions into plural fragment ions, and

wherein the measurement of the plural species of molecules to be measured is effected simultaneously based on the mass analyzing result of said plural fragment ions.

22. (New) A monitoring apparatus according to claim 21, further comprising a white noise auxiliary alternating current source arranged to apply a white noise auxiliary alternating current between endcap electrodes of said ion trap mass spectrometer,

wherein the selections of ions of plural species of molecules to be measured are effected by application of the white noise auxiliary alternating current, which does not

contain the characteristic frequencies of the ions of plural species of molecules to be measured by said ion trap mass spectrometer.

23. (New) A monitoring apparatus according to claim 21, wherein the dissociation of the selected ions is effected by application of an auxiliary alternating current comprising the characteristic frequencies of the ions of plural species of molecules to be measured, applied between endcap electrodes of said ion trap mass spectrometer.